

**What is claimed is:**

1. A combination of a rotor and a supporting structure for the rotor, the combination comprising:

a metal axle tube;

a holding member securely mounted in the axle tube, the holding member including a hole and an inner flange formed on an inner periphery defining the hole;

a supporting member securely mounted in the axle tube and including a supporting portion;

a fixing member securely mounted in the axle tube and including an opening; and

a rotor having a shaft provided to a center thereof, the shaft including an engaging groove, the shaft being extended through the hole of the holding member and the opening of the fixing member with an end face of a distal end of the shaft rotatably resting on the supporting portion of the support member and with the fixing member engaging with the engaging groove of the shaft, whereby the shaft and the inner flange of the holding member have a slight contact therebetween.

2. The combination as claimed in claim 1, wherein the axle tube includes a hole, and wherein the holding member, the support member, and the fixing member are tightly engaged with an inner periphery defining the hole of the axle tube.

3. The combination as claimed in claim 1, wherein the axle tube includes a hole, the holding member and the support member being tightly engaged with an inner periphery defining the hole of the axle tube, the fixing member being sandwiched between the holding member and the support member.

4. The combination as claimed in claim 1, wherein the holding member is a ring directly mounted to an inner periphery of the axle tube.

5. The combination as claimed in claim 1, wherein the holding member is a ring, the axle tube including an inner periphery having a stepped portion on which the ring rests.

1 6. The combination as claimed in claim 1, wherein the axle tube includes an inner periphery  
2 having a stepped portion against which the support member abuts.

3 7. The combination as claimed in claim 1, wherein the support member includes a closed  
4 bottom that forms the supporting portion.

5 8. The combination as claimed in claim 1, wherein the supporting portion of the support  
6 member includes a hole, further comprising a cover for covering the hole, the end face of the  
7 distal end of the shaft rotatably resting on the cover.

8 9. The combination as claimed in claim 1, wherein the fixing member includes an annular wall  
9 which abuts against the supporting portion of the support member.

10 10. The combination as claimed in claim 1, wherein the axle tube includes an inner periphery  
11 having a stepped portion against which the fixing member and the supporting member abuts.

12 11. The combination as claimed in claim 1, wherein the axle tube includes an inner periphery  
13 having a stepped portion against which the fixing member abuts.

14 12. The combination as claimed in claim 1, further comprising a base to which the axle tube is  
15 securely mounted, a balance plate being mounted to the base and made from magnetically  
16 conductive material, the rotor including a permanent magnet, the permanent magnet and the  
17 balance plate attracting each other.

18 13. A combination of a rotor and a supporting structure for the rotor, the combination  
19 comprising:

20 a metal axle tube including a ring formed on an inner periphery thereof;

21 a supporting member securely mounted in the axle tube and including a supporting  
22 portion;

23 a fixing member securely mounted in the axle tube and including an opening; and

24 a rotor having a shaft provided to a center thereof, the shaft including an engaging  
25 groove, the shaft being extended through the ring of the axle tube and the opening of the fixing  
26 member with an end face of a distal end of the shaft rotatably resting on the supporting portion  
27 of the support member and with the fixing member engaging with the engaging groove of the

1 shaft, whereby the shaft and the inner flange of the holding member have a slight contact  
2 therebetween.

3 14. The combination as claimed in claim 13, wherein the axle tube includes an inner periphery  
4 having a stepped portion against which the fixing member abuts.

5 15. The combination as claimed in claim 13, wherein the support member includes a closed  
6 bottom that forms the supporting portion.

7 16. The combination as claimed in claim 13, wherein the supporting portion of the support  
8 member includes a hole, further comprising a cover for covering the hole, the end face of the  
9 distal end of the shaft rotatably resting on the cover.

10 17. The combination as claimed in claim 13, wherein the fixing member includes an annular  
11 wall which abuts against the supporting portion of the support member.

12 18. The combination as claimed in claim 13, wherein the axle tube includes an inner periphery  
13 having a stepped portion against which the fixing member and the supporting member abuts.

14 19. The combination as claimed in claim 1, further comprising a base to which the axle tube is  
15 securely mounted, a balance plate being mounted to the base and made from magnetically  
16 conductive material, the rotor including a permanent magnet, the permanent magnet and the  
17 balance plate attracting each other.